

RTU6603

User's Manual



Beijing ART Technology Development Co., Ltd.

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Chapter 1 Overview

RTU6603 has ability to communicate, large capacity, powerful in computing capacity, easily do secondary development, and strong environment adaptiveness.

Unpacking Checklist

Check the shipping carton for any damage. If the shipping carton and contents are damaged, notify the local dealer or sales for a replacement. Retain the shipping carton and packing material for inspection by the dealer.

Check for the following items in the package. If there are any missing items, contact your local dealer or sales.

- RTU6603 Module
- ART Disk
 - a) user's manual (pdf)
 - b) drive
 - c) catalog
- Warranty Card

FEATURES

- ✧ CPU: 32-bit ARM9 Processor, working frequency: 200MHz
- ✧ Memory: 4 Mbytes Data Flash+64 Mbytes SDRAM
- ✧ Bus: one RS232 serial interface
 - one RS-485 serial interface (isolation)
 - one Network ports (10/100M Base-T, RJ-45 interface)
- ✧ Analog Isolation Input: 8SE/4DI, 12/14/16 bit (hardware configuration)
- ✧ Input Range: 0~5V, 0~10V, -5~+5V, -10~+10V or 0~20mA, 4~20mA
- ✧ Analog Isolation Output: 12-bit, 4-channel
- ✧ Output Range: 0~5V, 0~10V, -5~+5V, -10~+10V
- ✧ 16-ch digital input (dry/wet contact, TTL compatible), 16-ch digital output (open-collector), each 8 channels can be hardware configured (isolation), there are A-type (default), B-type and C-type.
- ✧ Temperature Humidity Sensor (optional)
- ✧ Accurate RTC Real Time Clock
- ✧ The efficiency of the DC converter up to 90% (1A @ 12V)
- ✧ Indicator: power supply indicator, program running indicator
- ✧ Power Supply: 9V~30VDC
- ✧ Operating Temperature: -40°C ~ +85°C

Hardware Configuration

RTU6603 hardware configuration options

1. Serial Communication

- 5-wire RS-232 can be selected

2. Digital Input/Output (16 channels, each 8-ch configuration)

- Optical isolation, isolation voltage: 2500Vrms
- Digital input optional (dry contact / wet contact)
- Digital output optional (open-collector)

Digital input and output can be selected as follows

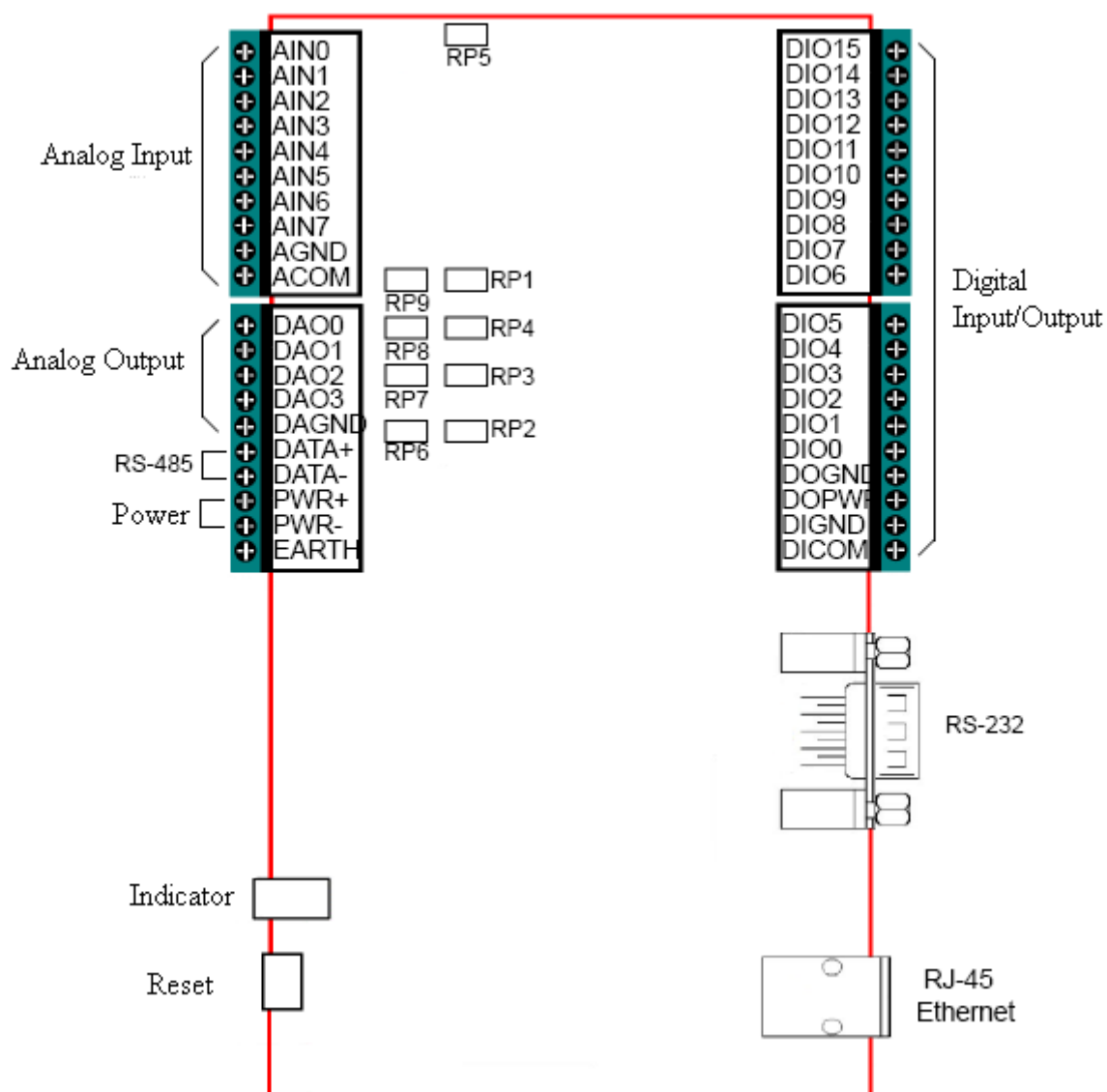
16 channels input (A-type), 8-ch input/8-ch output (B-type), 16 channels output (C-type).

Note: when select RTU6603, please tell the salesperson which configuration you want, or we will provide you RTU6603 with the default configuration.

RTU6603 default configuration

- Serial Communication: 5-wire RS-232, baud rate is 96000bps
- RS-485
- Ethernet IP Address: 192.168.2.80
- Analog Input Range: $\pm 10\text{V}$ (isolation)
- Analog Output Range: $\pm 10\text{V}$ (isolation)
- Digital Input/Output: 16-ch input (A-type)

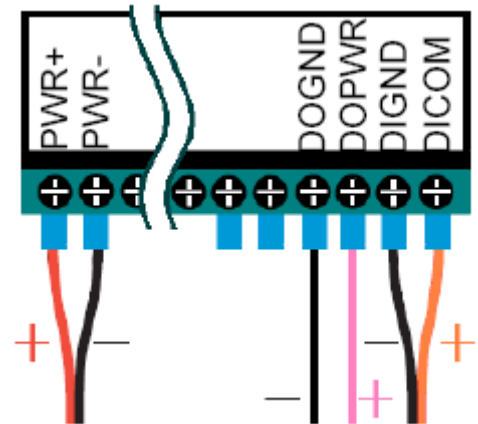
The Terminal Diagram



Chapter2 Subsystem Parameters and Installation Instruction

2.1 System Power

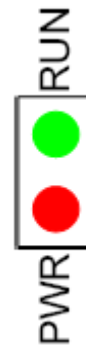
RTU6603 equipped with high efficiency switching power supply, Provide power supply for the entire system. Except PWR+, PWR- power supply terminals, DICOM provides power for digital input of wet contact, DOPWR provides power for digital output (open-collector). Specific energy consumption depends on the actual workload. DC 9-30V wide-range power supply, with reverse protection. Power connection diagram shown as the left, DICOM connects with digital wet contact power, DOPWR and DOGND connect with OC (open-collector) power.



2.2 Indicator

RTU6603 is equipped with two LED lights. PWR is power indicator, RUN is program running indicator.

When the power is connected to the PWR+ and PWR- terminals, power on, then the PWR indicator will be on. When the program started running, RUN indicator is flashing.



2.3 Reset button

The reset button can make the system restore the default settings:
Serial communication: 59-wire RS-232, the baud rate is 9600bps (DB9);
Ethernet IP Address: 192.168.2.80.

2.4 DIP Switch

DIP switch S2 is used to select the digital input and output configuration, the specific setting shows as the following:

1=ON, 2=ON: DO0~DO15

1=ON, 2=OFF: DO0~DO7 & DI8~DI15

1=OFF, 2=ON: DI0~DI7 & DO8~DO15

1=OFF, 2=ON: DI0~DI15



2.5 Analog Input

RTU6603 has 8-ch 12/14/16 bits analog input, isolation voltage is 2500Vrms, and there are two input modes: voltage input and current input.

RP5 potentiometer can adjust analog input zero-point.

1) Voltage Input Mode

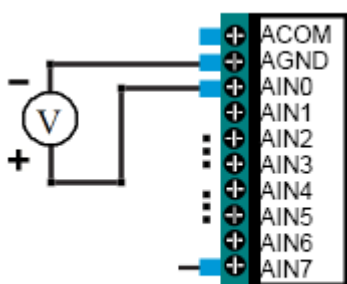
In voltage mode, RTU6603 analog input range: $\pm 10\text{V}$ (default), $\pm 5\text{V}$, $0\sim 10\text{V}$, $0\sim 5\text{V}$ and we can use software to select single-ended mode or differential mode.

Single-ended Mode: connect external analog signal with the AINx, and external analog ground with the ADGND of RTU6603.

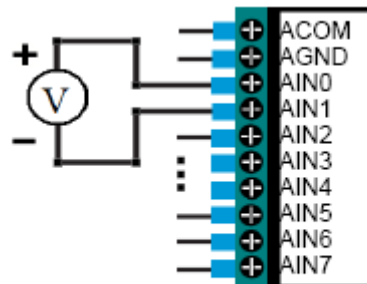
Differential Mode: connect external differential analog with the RTU6603 input ports, there are four ports in differential mode, corresponding to the AIN0 ~ AIN1, AIN2 ~ AIN3, AIN4 ~ AIN5, AIN6 ~ AIN7.

Note:

When connect external analog, please select the right range to avoid damage the internal components, and we should select work mode (single-ended, differential) in the program to correspond to the external connection (single-ended, differential).



Single-ended Mode



Differential Mode

2) Current Input Mode

RTU6603 provides current mode analog input, current range: $0\sim 20\text{mA}$ and $4\sim 20\text{mA}$.

Note:

When select the current mode, we should weld resistance in the AD terminal.

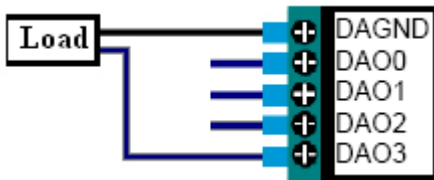
2.6 Analog Output

RTU6603 has 4-ch 12 bits analog output, output range: $0\sim 5\text{V}$, $0\sim 10\text{V}$, $\pm 5\text{V}$, $\pm 10\text{V}$ (default), isolation voltage 2500Vrms.

Potentiometers RP4, RP1, RP2 RP3 can adjust analog output DAO0~DAO3 zero-point.

RP8, RP9, RP6, RP7 adjust the analog output full-scale of DAO0 ~ DAO3.

Connection method shown as the following, connect the external load to DAOx and DAGND port.



Note: The analog output is voltage signal, can not drive high current loads. If necessary, please add an external drive.

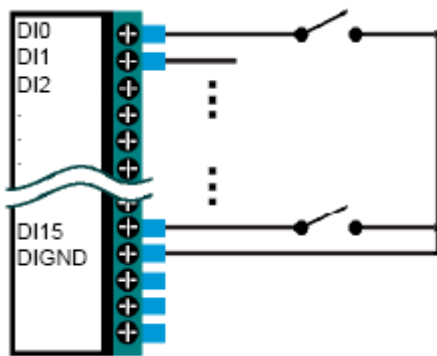
2.7 Digital Input

RTU6603 has 16-ch digital input/output, Digital input and output can be selected by the S2:

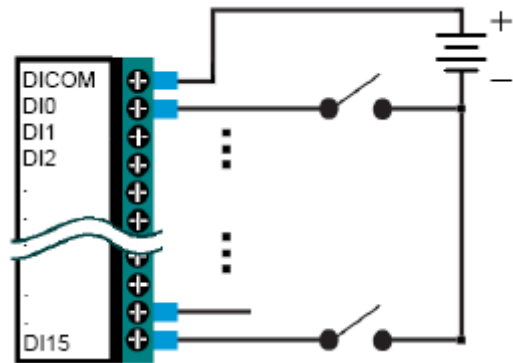
16 channels input (A-type), 8-ch input/8-ch output (B-type), 16 channels output (C-type).

Digital input signal compatible TTL signal, input high level is +5V~+30V, low level is 0~+1V, and with optical isolation, isolation voltage is 2500Vrms.

Digital Input has two types: dry contact and wet contact (anode).



Dry Connection

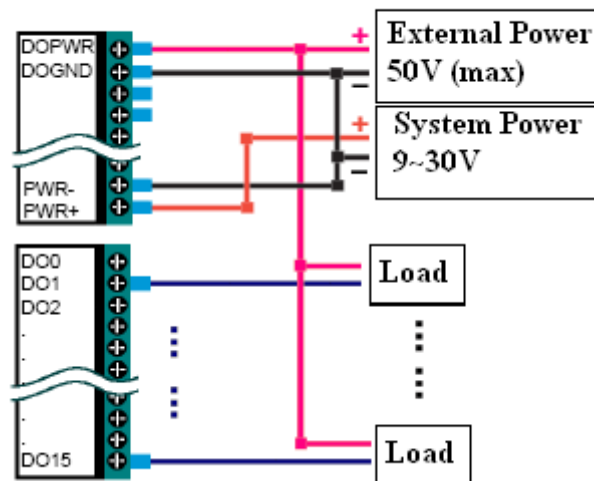


Wet Connection

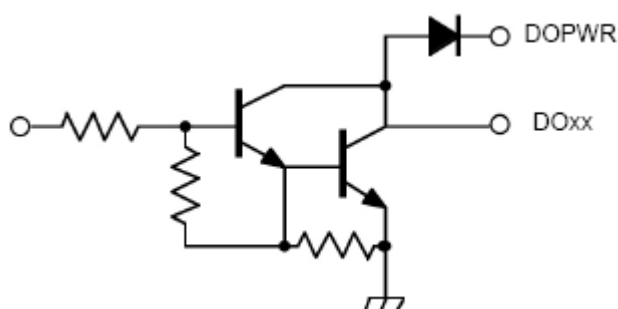
2.8 Digital Output

RTU6603 digital output is the isolated open-collector mode. Connection methods: connect DOPWR with external power supply positive (give voltage according to users' needs), connect the external power ground with the DOGND, and connect with the system power ground. Connect load between DOPWR and DOxx, the current flows from the power positive to load and then back to ground through the DO

The max voltage is connected to RTU6603 can up to 50V, the maximum continuous operating current is 500mA, each channel's maximum power consumption is 1W, and the total maximum power consumption of 8 channels is 8W (**Note:** The above parameters are limits, over limit will damage the device).

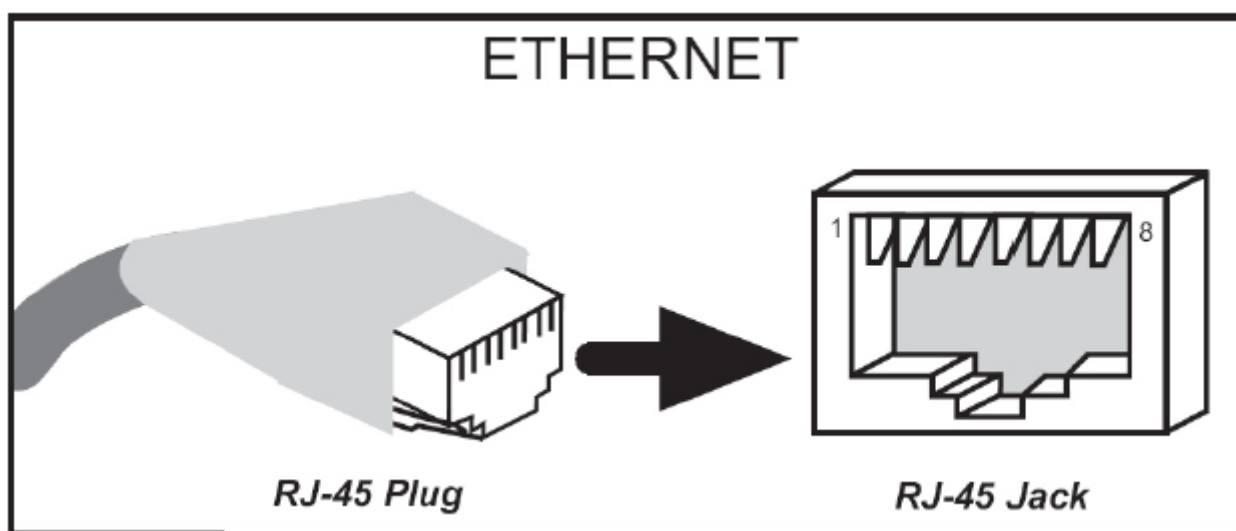


Digital output connection



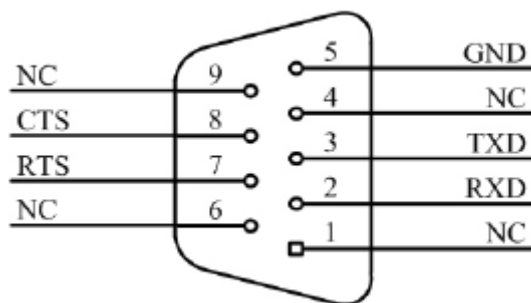
Internal structure of digital output

2.9 Ethernet Connection



2.10 Serial Communication

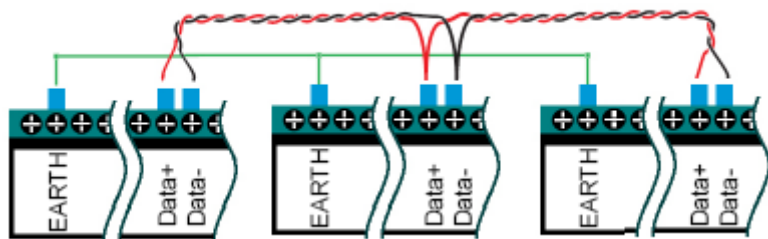
RTU6603 provides an asynchronous serial port, DB9 male connector, 5-wire serial port.



DB9 connector, 5-wire serial port

2.11 RS-485 Communication

RTU6603 provides isolated RS-485 communication interface, we can add 120ohm by shorted the JP1, the identification and connection method of RS-485 mode showed in the figure:



Chapter 3 Warranty Policy

Thank you for choosing ART. To understand your rights and enjoy all the after-sales services we offer, please read the following carefully.

1. Before using ART's products please read the user manual and follow the instructions exactly. When sending in damaged products for repair, please attach an RMA application form which can be downloaded from: www.art-control.com.
2. All ART products come with a limited two-year warranty:
 - The warranty period starts on the day the product is shipped from ART's factory
 - For products containing storage devices (hard drives, flash cards, etc.), please back up your data before sending them for repair. ART is not responsible for any loss of data.
 - Please ensure the use of properly licensed software with our systems. ART does not condone the use of pirated software and will not service systems using such software. ART will not be held legally responsible for products shipped with unlicensed software installed by the user.
3. Our repair service is not covered by ART's guarantee in the following situations:
 - Damage caused by not following instructions in the User's Manual.
 - Damage caused by carelessness on the user's part during product transportation.
 - Damage caused by unsuitable storage environments (i.e. high temperatures, high humidity, or volatile chemicals).
 - Damage from improper repair by unauthorized ART technicians.
 - Products with altered and/or damaged serial numbers are not entitled to our service.
4. Customers are responsible for shipping costs to transport damaged products to our company or sales office.
5. To ensure the speed and quality of product repair, please download an RMA application form from our company website.